WATERSHED MANAGEMENT FOR LAKE LANIER: PERSPECTIVES ON INTER-GOVERNMENTAL IMPLEMENTATION

Douglas S. Baughman[1], Mary E. Horton[2], Tim Merritt[3] and Robert R. Rivers[4]

AUTHORS: [1]Senior Environmental Scientist and [2]Environmental Scientist, CH2M HILL; [3]Assistant City Manager, City of Gainesville; and [4]Director of Public Works and Utilities, Hall County.

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Abstract. In March 2000, the City of Gainesville and Hall County, in cooperation with Forsyth County, completed the Community Watershed Assessment. The project outlined recommendations for improving or maintaining the water quality and biotic integrity of the tributaries entering Lake Lanier, as well as the tributaries to the North Oconee and Etowah Rivers. The three governments have continued to cooperate during the implementation phase. Hall County and the City of Gainesville have been working closely to ensure consistency in watershed management and efficiency in implementing the plan. The watershed management plan included recommendations for additional storm water controls, stream buffers, and increased enforcement of sedimentation and erosion control measures. Implementation of the watershed management plan required programmatic changes in existing municipal policies, potential organizational changes, and ordinance revisions. Hall County has developed a single watershed protection ordinance to incorporate many of the requirements for watershed management, including storm water quality and quantity controls, an approach for managing new development, and a requirement for stream buffers. The City of Gainesville has taken a similar approach and is revising the municipal code to incorporate these requirements. In addition, the City and Hall County have developed an integrated watershed monitoring program that includes both water quality and biological monitoring, stream walks to identify potential water quality and habitat degradation, and an adopt-a-stream program to solicit public participation.

INTRODUCTION

Located in northeast metropolitan Atlanta, the City of Gainesville and Hall County face complex decisions regarding how to balance growth with environmental protection (see Figure 1). This need provided the impetus for a community-wide watershed assessment as the first step in a comprehensive Watershed Management Plan that supports permitting of water withdrawals and National Pollutant Discharge Elimination System (NPDES) discharges. The purpose of the assessment was two-fold:

- Evaluate the environmental health of community streams.
- Develop a watershed management plan to control non-point source (NPS) pollution in all watersheds in the County including those leading to Lake Lanier.

Watersheds that were studied include several tributaries to Lake Lanier, the Chattahoochee River, and the Oconee River (see Figure 2). Watershed

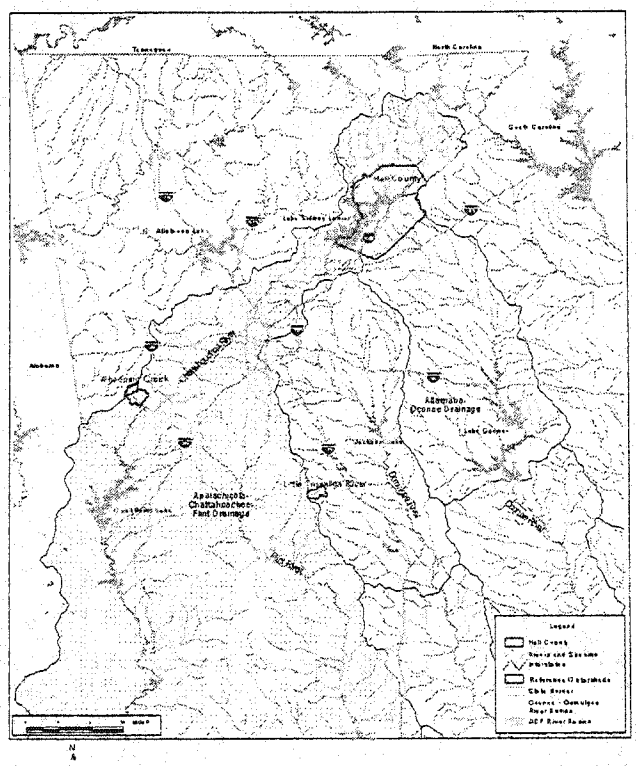

Figure 1. Location of Study Area.

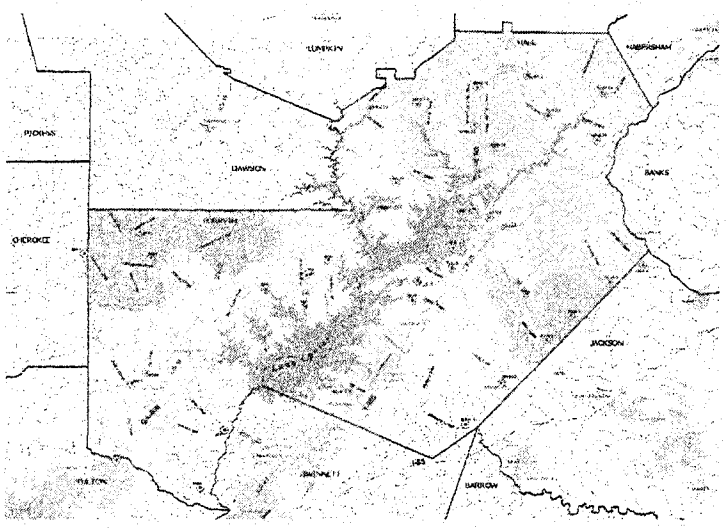

Figure 2. Location of Sampling Stations.

assessments are required by the State of Georgia to help control NPS pollution that may result from storm water runoff. The biggest contribution of storm water pollution often results from increased urban growth. The ultimate goal of this study was to provide the County and the City with a technically sound and defensible basis for making informed watershed protection decisions, and balancing economic growth with the long-term health of the local streams.

WATERSHED MANAGEMENT PLAN

The watershed assessment documents that water quality concerns within the community watersheds are attributable primarily to sedimentation and erosion. The sedimentation is primarily the result of increased hydrologic pulses and stream velocities associated with urbanized land uses, including new development, as well as historical and ongoing agricultural practices. Therefore, the management plan recommendations are focused on programs that will reduce sedimentation and erosion and minimize storm water runoff. Reducing erosion and sedimentation will also reduce the runoff of other contaminants, including nutrients and metals.

This Plan outlines what needs to be done to advance a comprehensive watershed management strategy that is achievable, cost-effective, and supported by the public. The core recommendations for a plan of action are as follows:

- **Adopt the Watershed Management Plan** – The City Council and the County Board of Commissioners should adopt the plan in principle and agree to support implementation of the recommendations.
- **Revise Existing Ordinances and Policies** – Specific ordinances will need to be reviewed and modified or new ordinances developed to support implementation of the proposed watershed management program.
- **Enhance Enforcement of Existing and New Ordinances** – Many of the existing ordinances for sedimentation and erosion control are not adequately enforced. Success of the management plan will be directly tied to the enforcement of these requirements. Each City and County department will need to evaluate additional staff requirements to fully implement these recommendations.
- **Develop or Revise Existing Development Review Process** – Revisions to the existing development review process are likely to be needed to implement the proposed new development requirements. A more detailed evaluation of the existing processes will need to be completed to define the required process changes.
- **Enhance Infrastructure Maintenance Programs** – As the City and the County continue to develop, the maintenance of existing and new sewage collection and treatment facilities, storm water treatment facilities, and on-site septic systems will become increasingly important to overall water quality management.
- **Conduct Reconnaissance Studies** – The specific recommendations for watershed restoration and retrofit will have to be developed after reconnaissance studies are conducted. Preliminary indications are that significant watershed restoration and retrofits are needed to enable many streams to meet their designated uses.
- **Implement Watershed Monitoring Program** – Future permits will be tied to documenting the effectiveness of the watershed management program and the associated reductions in NPS pollutant loading. An effective monitoring program will be key to achieving the City's and County's goals.
- **Enhance Public Outreach and Education Program** – Public education is one of the most cost-effective methods for minimizing NPS runoff. An educated citizenry is more likely to support water quality improvement programs and assist in their implementation.

IMPLEMENTATION STEPS

The Community Watershed Assessment and Management Plan was completed in March 2000. Since submission of the documents to GAEPD, both entities have been working to implement the watershed management recommendations. The efforts of the two entities have met with varying levels of success, as summarized below.

Hall County

Hall County recognized the need for coordination between the Public Works, Engineering, and Public Utilities staffs if the watershed management program was to be successful. Typically, the Public Works staff is responsible for reviewing proposed new developments, including site inspections and enforcement of sedimentation and erosion control requirements. The Public Utilities Department, which is responsible for the wastewater and water supply facilities, is responsible for the permit requirements for implementation of the watershed management programs and maintenance of water quality in their service area. Therefore, the County decided to combine the two departments into the Public Works and Utilities Department under a single director.

In addition, the County immediately initiated the development of a watershed protection ordinance that incorporated the recommendations of the management plan. The proposed ordinance was presented to the Commission in fall 2000 for first reading. Despite extensive public involvement during the development of the watershed management plan, public opposition to the initial draft ordinance has delayed implementation of the ordinance. The primary concerns were associated with the proposed 100-ft stream buffer requirements. In the absence of formal approval of the new ordinance, the County Commission has attached most of the watershed management requirements, including a 50-ft buffer, to all re-zonings.

City of Gainesville

The City of Gainesville followed a similar approach to implementation. The City promoted a member of the Public Utilities Department to an Assistant City Manager position. In this role, the Assistant City Manager, with a thorough understanding of the watershed management plan and water quality issues, will provide direction to the various departments within the City that will be responsible for implementation of the plan.

The City Council approved the proposed watershed management plan in fall 2000 and requested that staff begin steps to implement the recommendations. The City began by revising the existing Unified Development Code for the City to include the watershed management plan recommendations. City staff used the initial County watershed protection ordinance as the basis for the changes to ensure that the City and County programs were consistent. The ordinance revisions were completed in January 2001 and will be presented to the Council for approval in March 2001.

COORDINATED ELEMENTS

Hall County and the City of Gainesville have agreed to work together to administer the watershed management program. The two entities agreed that several components of the program were best implemented with a collaborative approach.

Environmental Monitoring

Understanding the sources and magnitudes of stream impairment is fundamental to developing effective strategies for achieving water quality improvements and restoring or maintaining biotic integrity. An environmental monitoring program helps provide this understanding. The City's and County's long-term goals should be consistent with the GAEPD position that all jurisdictions should implement effective NPS pollution control programs in order to achieve and maintain beneficial uses of their waters that are regulated by the state. The City and the County have planned to work together on certain aspects of this monitoring in order to maintain consistency and level of effort.

The purposes of an environmental monitoring program are multifaceted and involve not only identifying water quality impairments/improvements but also monitoring the effectiveness of the management plan and recommended best management practices (BMPs). The objectives of the monitoring plan include:

- **Documenting Stream Improvement**— Implementation of BMPs and land use control measures should result in measurable enhancements in stream water quality and biotic integrity. The monitoring program has been designed to collect the data needed to document stream improvements and any pollutant reduction that can be attributed to the watershed management program.
- **Identify Streams Requiring Further Action** – Not all streams in the study area were sampled in the watershed assessment and additional continuous

monitoring is needed to determine whether other stream segments may need further site-specific actions.

- **Monitor Effectiveness of the Management Program** – The ultimate goal of the management program is to maintain or improve existing conditions in the watersheds. The monitoring program was designed to determine the extent to which the recommended combinations of BMPs and retrofitted stream segments are meeting this goal.
- **Monitor BMP Effectiveness** – Recommendations for BMPs and restoration projects are based primarily on literature values on pollutant reduction efficiencies. Therefore, the effectiveness of certain groups of BMPs will be monitored by doing site-specific water quality measurements to help determine the extent to which these BMPs are working as anticipated.
- **Validation/Calibration of Model**—The data collected for the long-term monitoring program will also be used to continuously update the water quality model, providing calibration and validation of the model.
- **Evaluate Government Processes** – Many of the recommendations in the watershed management program are related to changes in existing governmental processes such as zoning and planning, review of proposed developments, site inspections, and coordination between departments that is needed to implement a comprehensive program for water quality management. GAEPD has indicated that the recommendations in the management program will be incorporated into the NPDES and/or surface water withdrawal permits. Failure to comply with these recommendations may constitute violations of these permits. Therefore, the long-term monitoring programs must include a mechanism for tracking the progress made in revising existing processes and implementing new ones.

Database Management and Reporting

To efficiently use available data, managers need a framework for storing, retrieving, and analyzing the data. The database management approach that the City of Gainesville and Hall County are proposing to adopt will provide a tool for long-term management of large amounts of data.

Internal reports summarizing the condition of streams sampled for both long- and short-term water quality monitoring will be prepared quarterly by both the City of Gainesville and Hall County. This frequency will promote continuous review of the data and help to identify trends in water quality that may be of concern. For external reports to GAEPD, reports will be issued annually by each entity. The reports during the first 3 years may contain data summaries only. The reports will be used to summarize all of the water quality and biological sampling and document successes and failures in the watershed management program. Based on the results of these reports, which will be written independently but submitted to the state together, the City and the County will re-evaluate the watershed management program and make recommendations for adjustments to the program to assure watershed improvement goals are met. However, each entity is ultimately responsible solely for the submission of their reports.

BENEFITS OF COOPERATION

The City of Gainesville and Hall County initiated the cooperative watershed assessment because they recognized that their existing service areas overlapped several watersheds and that without collaborating, the two entities would duplicate significant elements of the required studies. The same recognition applies to implementation of the watershed management plan. The key benefits to continued cooperation include cost savings, increased clarity for property owners and developers, and enhanced potential for successful watershed management. By sharing resources for environmental monitoring, for example, the City and County will significantly reduce the total costs for labor and equipment. The use of similar management programs also reduces the potential for new development to be driven to the entity or area with the least requirements for storm water controls on new development. With common requirements in both jurisdictions, land owners and developers are on a level playing field. Finally, with common requirements for watershed management, the City and County staff will be more likely to identify violations of the watershed protection ordinances before significant water quality problems occur.

IMPLEMENTATION HURDLES

The hurdles encountered thus far are typical of metropolitan communities throughout the U.S. These include misconceptions about impacts on property owners, concerns among elected officials that the initiatives may discourage growth, a shortage of

available staff and funding, and the establishment of mechanisms for project tracking. One of the most difficult issues to overcome is that local governments will now be responsible for water quality within their communities. Unfortunately, for most local government staff and elected officials, the concepts are new and often intimidating. Establishing a method of funding the required monitoring and watershed restoration programs will also be a major roadblock for implementation. Local government budgets are continually stretched to provide the services that residents typically expect to receive. Additional fees will need to be developed to provide the required funding. Although storm water utility programs are one of the most common approaches for collecting additional funds, alternative sources such as state and federal grants will also need to be actively pursued.

CONCLUSIONS

Project team members from both entities have concluded that conducting the watershed assessment is really the easy part. The protocols for watershed assessment and water quality modeling are well established and development of watershed management programs to address existing and future water quality impacts is now relatively straightforward. The new challenge is to determine the most effective ways to facilitate implementation of watershed management at the local government level. Clearly, continued cooperation between local entities is going to be key to achieving the project watershed protection and management goals.

LITERATURE CITED

CH2M HILL, 2000. Community Watershed Assessment and Management Plan, Hall County and the City of Gainesville. Prepared for Hall County Public Works and Utilities Department and the City of Gainesville Public Utilities Department.